August 25, 2010
Energy Commission Business Meeting
Item #5

EURISKO SCIENTIFIC

Grant Agreement ARV-10-003
for the
Enhanced Transportation Biomethane Production
from Municipal Sludge Digesters Project

Abstract

Eurisko Scientific and U.S. Department of Energy's Argonne National Laboratory will partner with the Sacramento Municipal Utility District to optimize and demonstrate an additive process to increase the productivity of anaerobic digestion and reduce the amount of CO_2 produced. A patent-pending process developed at the Argonne National Laboratory uses magnesium silicate minerals to convert CO_2 emitted during the digestion process to calcium carbonate. The Argonne process also increases the rate and volume of biogas production, increases the biomethane content of the biogas (and thus the energy content), reduces impurities in the gas, and produces byproducts of carbonates. The Energy Commission will provide $1,830,132 in Alternative and Renewable Fuel and Vehicle Transportation program funds. Additional match funding of $1,870,824 will be provided by the project participants.

The objective of this project is to a) conduct testing at Argonne National Laboratory to optimize methods for adding the additives and process control, b) conduct a field demonstration of the additive process at the Sacramento Regional Waste Water Treatment Plant, c) verify and document the increased generation of biomethane and reduction of CO2 and other greenhouse gases, and d) produce transportation liquefied natural gas (LNG) or compressed natural gas (CNG) for six months. The project will produce approximately 5,000 standard cubic feet of compressed biomethane per ton of wet waste material.

Participants

Eurisko Scientific is the commercialization partner for Argonne's biomethane technology.

Technikon LLC will provide program management and lead the testing effort at the Sacramento Regional Waste Water Treatment Plant.

Argonne National Laboratory will provide their developed and patented technology to be implemented and conduct the bench scale and pilot scale additive and process optimization.

Sacrament Municipal Utility District will provide resource assessment and project support, and use of an anaerobic digester at their waste water treatment plant in Elk Grove, California.

Williams Engineering and Associates will provide engineering support for the anaerobic digester modifications.

CHA Corporation will provide cleaning for the biogas produced.

Clean Energy will provide collection and distribution of the biomethane for use in LNG vehicles.

The Sacramento Regional Waste Water Treatment Plant in Elk Grove will be the demonstration site.

Benefits

Environmental benefits include reduction of greenhouse gas (GHG), ammonia, and particulate emissions. The process will capture nutrients for reuse and reduce the use of inorganic fertilizers. It will also provide beneficial reuse of recycled water, reduction of groundwater and surface water contamination, and reduction of solid waste to landfills.

Energy benefits include the generation of high-quality renewable fuel through a net energy-producing process, production of surplus energy as electricity and heat, and reduced reliance on imported oil. If adopted at all wastewater treatment plants in California, 870 million gallons or 29 percent of all diesel fuel consumed in California could be displaced and more than 7.3 million tons of CO_2 eliminated.

Economic benefits include the transformation of waste liabilities into a revenue stream, reduction of water consumption, potential revenue from green energy and carbon credits, and potential revenue from sales of digested manure and sewage.